



Heytesbury Underground Gas Storage (HUGS) Pipeline

Attachment J – Part 3



Environmental & Social Impact Assessment



Scope and Context of Risk Assessment

Context or scope of assessment:	RA-915 HUGS Pipeline Consolidated Environmental and Social Risk and Impact Assessment.
Objectives:	The Consolidated Environmental and Social Risk and Impact Assessment identified all plausible scenarios that could lead to environmental or social impact due to the construction and operation of the HUGS Pipeline. Evaluation of environmental impacts also extended to the aspects of nuisance, community impact, public safety and potential for environmental harm within and beyond the pipeline corridor.
Facilitator:	Hannah Prosser (Project HSE Lead)
Participants:	Gianni Lucchi (Project Manager), Susie Bartlett (Stakeholder & Approvals Manager), Ian Spence (MVC Environmental Specialist)
Location:	Teams
Date:	Workshop 1 - November 2023 Workshop 2 - May 2024



		Operations & Systems				Financial & Commercial	Regulatory & Stakeholders					Likelihood (Probability)					Risk Treatment & Communication			
		People, Health & Safety	Public Health and Safety	Environment	Production - Daily Contracted Capacity	Financial (including environmental clean-up/rehabilitation and damage to public or private property)	Regulatory & Compliance	Public Amenity	Aboriginal & Cultural Heritage	Land and Land Use / Services	Petroleum, Petroleum Source or Reservoir	Reputation	1	2	3	4				5
Severity	5 Critical	Fatality of one or more people Permanent or severe disablement of one or more people	Fatalities, life-threatening injuries or illnesses resulting in permanent disablement. Public exposed to a severely debilitating chronic health impact or life-threatening hazard.	Environmental damage (including from complete loss of petroleum containment) that cannot be remediated. A State-level incident response is required. Damage leading to bioregional, State or national extinction of listed threatened species of native flora or fauna or vegetation community. Irreversible or long-term (years) damage or environmental harm to ≥10 ha of native vegetation (not listed threatened vegetation community) or to ≥1 ha of listed threatened native vegetation community. Deaths of hundreds (or more) of listed native flora or fauna species or native mammals. Contamination or other environmental damage leading to deaths of native fauna well beyond (>1 km) the boundaries of the operation. Contamination of surface water or groundwater leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for more than a year.	Negative production impact of >3 days of total contracted capacity	Impact of \$5.0million or greater	Inability to operate (loss of licence to operate) due to extreme breach of licence, regulatory or other obligation	Continuous significant losses of amenity over periods of weeks or longer.	Destruction of place(s) and/or associated cultural values of exceptional value. Irreversible damage or destruction.	Permanent loss of production from primary production land >10 ha. Loss of annual-seasonal primary production from >100 ha of land. Irreversible or long-term environmental damage to >1 ha of National Park or other conservation reserve. Services suspended or significantly disrupted for extended period (weeks or longer).	Damage to source material leading to its incapacity to produce and/or release petroleum. Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, that cannot be rectified and therefore abandoned or disposed of. Damage that interferes with the integrity of the reservoir leading to total loss of the petroleum held to the surrounding subsurface or to surface.	Irreparable damage to reputation Sustained negative media coverage (weeks) National or global exposure	HIGH 5	HIGH 10	HIGH 15	EXTREME 20	EXTREME 25	Extreme	Risk to be communicated immediately as indicated by Risk Management. Risk treatment to be identified as soon as possible. Risk to be escalated to Corporate Register. Risk and controls reviewed quarterly.	Board of Directors
	4 Major	Long term injury of 1 or more people impacting ability to perform job function for greater than 3 months	Injuries or illness requiring hospitalisation, surgery or resulting in long-term disablement. Public exposed to a hazard that results in hospitalisation for treatment from injury or illness.	Environmental damage (including from temporary loss of petroleum containment) that can be remediated but involves significant works (months) and/or specialised resources. A regional emergency management incident response required. Damage leading to local extinction of listed threatened species of native flora or fauna or vegetation community. Deaths of up to ~100 listed threatened flora or fauna species or native mammals. Major damage or environmental harm to 1-10 ha of native vegetation (not listed threatened vegetation community) or to <1 ha of listed threatened native vegetation community that will be irreversible or take years to recover from. Contamination of surface water or groundwater leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for up to one year.	Negative production impact of 1 - 3 days of total contracted capacity	Impact of \$1.0 - \$5.0million	Breach of licence, legislation or regulatory obligation resulting in significant penalties or fines	Regular (weekly-monthly basis) significant losses of amenity for multiple days on end.	Destruction of a rare occurrence place(s) and/or associated cultural values. Damage and removal, or relocation or removal of associated elements.	Permanent loss of production from primary production land <10 ha. Loss of annual-seasonal primary production from 10-100 ha of land. Irreversible or long-term environmental damage to <1 ha of National Park or other conservation reserve or to ≥10 ha of other public land. Reversible damage to ≥1 ha of National Park or other conservation reserve or to ≥10 ha of other public land. Services suspended or significantly disrupted for days or experiencing minor disruptions for long periods (weeks or longer).	Damage to source material leading to its capacity to produce and/or release petroleum being significantly reduced or delayed. Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works at a cost >\$1 million. Damage that interferes with the integrity of the reservoir leading to significant loss of the petroleum held to the surrounding subsurface or to surface.	Damage to reputation Sustained negative media coverage (3-4 days) State or National exposure	MEDIUM 4	HIGH 8	HIGH 12	EXTREME 16	EXTREME 20	High	Risk and appropriate treatment to be identified as soon as possible to Risk Management, and escalated to Corporate Register. Risk and controls reviewed quarterly.	Member of Lochard Management Team (>10 to CEO) and Corporate Services Advisor
	3 Significant	Short term injury or disability of 1 person impacting ability to perform job function for less than 3 months	Injuries or illness requiring treatment by a physician or hospitalisation. Public exposed to a hazard that results in injuries or health effects requiring on-going monitoring.	Environmental impact with no long term impact that is readily remediated (within weeks) with known resources. Damage leading to deaths of a small number of listed threatened flora or fauna species or native mammals. Reversible damage or environmental harm to <10 ha of non-listed native vegetation community or <1 ha of listed native vegetation community. Localised contamination of surface water or groundwater leading to disruption of environmental values, indicators and objectives as defined by the EPA Environment Reference Standard for weeks to months.	Negative production impact of 0.5 - 1 days of total contracted capacity	Impact of \$100,000 to \$1.0 million	Breach of licence, legislation or regulatory obligation resulting in penalties or fines	Regular (weekly-monthly basis) significant loss of amenity.	Destruction of a common occurrence place(s) and/or associated cultural values. Works to features that will not alter the cultural heritage significance.	Loss of annual-seasonal primary production from <10 ha of land. Short-term (days-weeks). Disruption to 10-100 ha of primary production land. Reversible damage to <1 ha of National Park or other conservation reserve or to <10 ha of other public land. Services suspended or significantly disrupted for up to 1 day or experiencing minor disruptions for weeks.	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works (Cost per financial category). Damage to source material leading to its capacity to produce and/or release petroleum being moderately reduced or delayed. Damage that interferes with the integrity of the reservoir leading to moderate loss of the petroleum held to the surrounding subsurface or to surface.	Significant adverse impact on reputation Adverse media coverage (>2 days) Local or Shire exposure	LOW 3	MEDIUM 6	HIGH 9	HIGH 12	HIGH 15	Medium	Consider risk treatment if not already ALARP. Identify gaps and action plans, and seek approval via Risk Management. Risks escalated to Corporate Register at discretion of Risk Management. Risk and controls reviewed annually.	Line Manager (Project, Production, E&M, etc.)
	2 Minor	Minor injury or illness requiring some medical treatment or hospital care (i.e. laceration requiring stitches, burns, etc.)	Injuries or illness requiring first aid treatment. Public exposed to a hazard that could cause injuries or adverse health effects requiring first aid treatment.	Minor environmental damage with no long term impact. Some remediation work required using internal resources and expertise completed within days. Damage to <1 ha of native vegetation (not listed threatened vegetation community) that can be recovered in weeks to months. Damage that affects native fauna populations but does not kill individuals or disrupt breeding or other important ecological processes. Contamination of natural waterway or wetland occurs, but water quality remains within applicable EPA or ANZECC guidelines. Water extraction or diversion reduces surface water flows or groundwater available for environmental uses, but with no detectable effect on dependent species or ecosystems and carried out within terms of water licence.	Negative production impact of 0.25 - 0.50 days of total contracted capacity	Impact of \$10,000 to \$100,000	Isolated breach of licence, regulatory or compliance with no obligation to report	Infrequent (no more than monthly) small effect on amenity.	Destruction of a place(s) and/or associated cultural values in a deteriorated condition with a high degree of disturbance evident and some cultural heritage remaining. Isolated damage to regionally or locally significant features that is readily rectified.	Minor damage to agricultural or public land not requiring active rehabilitation. Temporary and small-scale disruption to agricultural production (days, 1-10 ha) Services suspended or significantly disrupted for short period (hours).	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works (Cost per financial category). Damage to source material leading to its capacity to produce and/or release petroleum being reduced or delayed to a minor extent. Damage that interferes with the integrity of the reservoir leading to minor loss of the petroleum held to the surrounding subsurface or to surface.	Moderate adverse impact on reputation Limited media coverage (1 day) Local exposure only	LOW 2	LOW 4	MEDIUM 6	HIGH 8	HIGH 10	Low	No risk treatment required. No ongoing review required.	Activity manager/person conducting assessment
	1 Insignificant	Minor injury involving first aid treatment only (i.e. minor burn, bruise, abrasion).	Injury or ailment that does not require medical or first aid treatment.	Slight environmental damage easily remediated with no impact	Negative production impact of 0.10 - 0.25 days of total contracted capacity	Impact of less than \$10,000.	Minor breach of guidelines, standards, or internal policy or procedure requiring internal corrective action	Infrequent (no more than monthly) marginal reduction in amenity.	No impact on Aboriginal or other cultural heritage sites	Services maintained but experiencing minor disruptions or delays.	Contamination of petroleum, whether within the facility of the authority holder or in the subsurface, necessitating rectification works (Cost per financial category). Damage to source material does not impact its capacity to produce and/or release petroleum. Damage that does not interfere with the integrity of the reservoir.	Little to no impact No media coverage	LOW 1	LOW 2	LOW 3	MEDIUM 4	MEDIUM 5			

Impact Number	Aspect	RMC Category	Causes	Impact	Owner	Consequence	Existing Controls	Performance Objectives and Management Actions	Consequence
							Controls		
1	Energy security and reliability	Reputation Public Amenity	-Firming and expansion of gas storage capabilities	-Stability of gas supply for Victoria	G. Lucchi	2	Not applicable		2
2	Local Business Opportunity	Reputation Public Amenity	-Presence of work crew in town using amenities	-Extra revenue brought to local business	G. Lucchi	2	Not applicable		2
3	Aboriginal and Victorian Cultural Heritage	Aboriginal & Cultural Heritage Reputation Regulatory and Compliance	-Pipeline corridor is within areas of Aboriginal Cultural Heritage sensitivity	-Possible disturbance of Aboriginal cultural heritage	G. Lucchi	3	- Cultural Heritage Management Plan for the HUGS Project has been approved. - Pipeline contractor will be subject to the general management conditions of the CHMP. - Dedicated Cultural Heritage inductions will be undertaken in accordance with general management conditions of the CHMP. - Prior to the commencement of ground disturbing activities, provision of a 'walk through' with Contractor's site supervisor (and EMAC representatives) and Lochard Energy's representative(s) to validate that all compliance requirements are understood and the surveyed area of disturbance is clearly marked. Ensure that machinery operators understand compliance expectation. - Compliance audits will be undertaken on a regular basis in accordance with the CHMP.	Performance Objective 03 Management Action CH1-CH7	1
4	Activities may result ground disturbance that may lead to soil compaction	Environment Land and Land Use/Services Financial Reputation Regulatory	-Vehicle and equipment movement -Construction activities	-Reduced agricultural productivity. -Reduced rehabilitation success.	G. Lucchi	3	- Reinstatement and Rehabilitation Plan to consider ripping of sub soil prior to replacement of top soil - Reinstatement and Rehabilitation Plan to incorporate landholder requirements from Property Management Plan - Contractor must prepare an Erosion and Sediment Control Management Plan which is informed by site soil testing from at least three (3) locations	Performance Objective 04 Management Action ES1-ES6	2
5	Land Use Restriction	Land and Land Use/Services Financial Reputation Regulatory	- Temporary construction right of way - Restrictions due to easement encumbrance	- Loss of amenity - Loss of productivity - Loss of access to construction right of way - Restricted access as a result of construction right of way	G. Lucchi	4	- Property Management Plan - Financial reimbursement for business access and amenity impacts - Land Liaison	Performance Objective 05	2
6	Future Land Use	Environment Land and Land Use/Services Reputation Regulatory	Pipeline corridor crosses agricultural land	- Easement restrictions on the land prohibit certain types of development and land use	G. Lucchi	2	- Regular Pipeline patrol and inspection of easement once operational - Financial reimbursement for easement encumbrance - Land Zone and Corangamite shire land planning scheme	Performance Objective 06 Management Actions RR1-RR4 Management Action LU1-LU3	1
7	Biodiversity Impacts Flora and Fauna	Environment Reputation Regulatory and Compliance Financial	- Activities will result in impact to or removal of native vegetation	- Reduction of native vegetation	G. Lucchi	3	- Design has minimised impact on native vegetation following ecology assessment and application of avoidance via HDD and minimisation where avoidance is not possible. - Where road reserves are crossed via HDD, construction access should be limited to existing access points. - Access points will be assessed to ensure that swept path analysis is completed for oversized vehicles (e.g. pipe trucks and HDD rig) to ensure no further trimming or native vegetation removal is required. - Tree protection zones to be assessed and established if required - Vegetation trimming only (exotic flora) as required for access and site maintenance. - Native vegetation Offsets to be acquired	Performance Objective 07	1
8	Biosecurity	Environment Reputation Land and Land Use/Services Public Amenity Regulatory	- Construction of pipeline right of way across property with active biosecurity management plans - Construction of pipeline right of way across properties with known noxious weeds	-Loss of agricultural productivity. -Reduction in biodiversity values of vegetation is affected.	G. Lucchi	3	- Ensure that all preparatory planning controls are consistent with HUGS Biosecurity Management Plan [UGS-HP-0050] and EMP. - Principal Contractor must outline how they will comply with HUGS Biosecurity Management Plan [UGS-HP-0050]. This must include: - Management measures to control high risk activities to spread weeds and pathogens such as initial on-ground activities and ground disturbance activities. - Proposed system of hygiene, inspection and record keeping - frequency should reflect the risk of weed transfer. - Weed hygiene methodology in wet conditions and dry conditions. - Lochard energy will undertake regular compliance inspections to assess conformance with Weed and Biosecurity commitments. - Re-seeding of pasture land (at the appropriate time of year) and monitoring for weeds undertaken in accordance with Property Management Plan. - Eradication of any noxious weed species to be undertaken by experienced personnel using herbicides agreed to by the landowner.	Performance Objective 08 Management Action BB1 - BB14	1
9	Surface Water and Watercourse	Environment Land and Land Use/Services Reputation Regulatory	- Requirement to cross watercourses	- Impacts to natural water flow if present - Barrier to fauna movement	G. Lucchi	2	- Development of a minor waterway crossing procedure will be prepared by the pipeline contractor to detail proposed methodology for the construction of each crossing. This will include provision for the establishment of site, implementation of controls, demonstrating compliance and reinstatement to ensure that all impacts are contained to the construction right of way. - The minor waterway crossing procedure will be prepared in accordance with the requirements of the works on waterway permit to be issued by Corangamite Catchment Management Authority	Performance Objective 09 Management Action TD1-TD3 Management Action WC1-WC7	1
10	Ground Water Impacts	Environment Land and Land Use/Services Reputation Regulatory	-Trenching activities in proximity to bed and bank of watercourses	- Construction activities impact ground water flow pathways - Barrier to subsurface flow	G. Lucchi	2	- Where subsurface groundwater is expected (watercourse crossings), trench breakers will be designed and installed where there are sections of slope to prevent subsurface flow paths developing following completion of construction. - A trench construction methodology will also be developed prior to construction with contingency should any unexpected ground water interception be made. - The EMP will contain a dewatering procedure that outlines the expectation for dewatering of trenches and excavations as a precautionary measure to account for the event of rainfall infiltration or unexpected groundwater inflow. - The HDD Management Plan will contain details on how subsurface interception of aquifer/ ground water flow will be managed during the activity.	Performance Objective 10 Management Action TD1-TD3 Management Action WC1-WC7	1

11	Noise generating activities	Environment Reputation Public Amenity Regulatory	- Excessive noise generated from equipment for short time frame - Negative impact in landholder and other stakeholder relations as a result of noise disturbance	- Disturbance to nearby residents, livestock or receiving environment from increased noise levels - Negative impact in landholder and other stakeholder relations as a result of noise disturbance	G. Lucchi	2	- The Construction Noise Plan must include a clear rationale for defining works as 'low-noise', 'managed impact', or 'unavoidable' (as defined in EPA Publication 1834) and response strategies to minimise the risk of harm from noise emissions as far as reasonably practicable with reference to EPA Publication 1834 "Civil construction, building and demolition guide". - For 'managed impact works' (activities that will occur outside of normal working hours), the pipeline contractor will prepare an assessment as part of the Noise Management Plan to effectively control. - The construction noise management plan will detail how construction activities will avoid triggering 'unreasonable noise' as defined by s3(1)(a) of the Environment Protection Act 2017. - The Contractor must develop commitments to adequately notify and reduce impact on potentially affected residents ahead of commencement of managed impact works. - Lochard Energy must pro-actively engage with residents whose properties are likely to experience construction noise prior to commencement of clear and grade. Each resident must be notified of the likely exceedance and expected duration of works with means of attenuation or recompense offered for the inconvenience. Project contact details must be provided to encourage communication or complaints should the noise prove to be too disturbing. - The Contractor must develop a workflow to effectively respond to complaints. There must be structured layers of escalation that extends to offering respite in the case of ongoing works. - The pipeline contractor shall: - Undertake equipment inspections to ensure all equipment is in serviceable condition. - Ensure maintenance of equipment in accordance with planned schedules. - Complete project inductions to all Project staff that include information on the importance of site behaviour, managing loud noise, minimal use of equipment to undertake the task and the proximity of residents to the site.	Performance Objective 11 Management Action NV1-NV3	1
12	Visual amenity	Environment Reputation Public Amenity	-Plant, Vehicles and Equipment Increased traffic (East and West road) -Site infrastructure (temporary - including site offices, stockpiles) - Plant and vehicle movement generates excessive dust adjacent to public roads creating poor visibility. - Construction Lighting (emergency use only)	- Visual impact due to infrastructure - Temporary reduction in visual amenity from increased infrastructure and traffic movement	G. Lucchi	2	- Site accessible via non-major roads. - Infrastructure, vehicles and/or equipment removed from site when no longer needed - Tree lines along roadways help obscure view of infrastructure, vehicles and equipment - Ensure stakeholders, road users and broader community catchment is established and communication methods/ frequency of use are identified in a Construction Pipeline Consultation Plan and implemented by the pipeline contractor.	Performance Objective 12 Management Action VA1-VA2	1
13	Air Quality	Environment Public amenity Reputation Regulatory	- Dust generated by vehicle and equipment activity - General site work - Soil stockpiles	- Reduced air quality to adjoining residents	G. Lucchi	2	- Lochard Energy will prepare an EMP that incorporates dust reducing management measures that must be implemented by the Pipeline contractor. - Pipeline contractor to actively review forecast and plan for dust control where high wind and dry weather is forecast. - Cover stockpiles if necessary during storage periods to prevent dust generation. - Dust suppression using a water tanker for roadways as required. Utilise appropriate dust suppression methods (such as spraying water over disturbed areas/stockpiles) where necessary. - Vehicle/Equipment movements to be kept to approved work areas and in accordance with Traffic Management Plan requirements. - Monitor worksite, stop and reassess work during high wind events and visible dust movement outside of the project area. - The Contractor will comply with the enquiries, complaints and feedback workflow to effectively respond to complaints.	Performance Objective 13 Management Action AQ1-AQ12	1
14	Greenhouse Gas Emissions	Environment Reputation Regulatory	- Vehicles and equipment	- Potential climate impact	G. Lucchi	2	- Vehicles and equipment to be turned off when not in use and not left idling - Equipment is serviceable - Solar panels for fencing equipment	Performance Objective 14	1
15	Traffic and Transport impacts	Reputation Regulatory	- Increased heavy vehicle movement on local roads for short durations - Increase of light vehicle traffic in local area	- Road users negatively affected by construction traffic and vehicle movement. -Complaints/ Reputational loss due to increased road use and increased HGV movements.	G. Lucchi	4	- Project Traffic Management Plan (TMP) developed by the pipeline contractor to define intended road use, access points, speed limit reductions, scheduling and provision for maintenance of access points during wet weather. Contractor shall also nominate notification timing, extent and method to inform the community about upcoming works. - Early engagement with Corangamite Shire Council to discuss permitting, road maintenance during/ following construction. - Contractor shall include consideration of fatigue management as part of the overall Safety Management Plan. - East and West Road Existing Conditions Report [UGS-CT-0025] - Inductions and pre-starts to reinforce vehicle/traffic requirements including positive driver behaviour. - Speed limits identified and observed. - Reduced speed limit on East West Road (based on traffic study completed) adopted during construction work. - Relevant Permits as required. - Complaints process outlined in the Pipeline Consultation Plan and EMP.	Performance Objective 15 Management Action TT1-TT2	2
16	Vibration	Environment Public amenity	- Operation of Plant and Equipment creates ground vibration during pipeline construction	- Disturbance to nearby residents, livestock or receiving environment from increased vibration levels - Vibration causes damage to existing assets such as buildings, roads or other existing above ground or buried infrastructure.	G. Lucchi	1	- Plant and equipment will be serviced prior to commencement on site and maintained in accordance with manufacturers guidelines. - No blasting or rock sawing will be undertaken on site. - Rock breaking is expected to be minimal and will be done (only if necessary) in locations at least 200m from existing buildings and receptors. - HDD crossings will be designed to cross assets at a depth that adequately separates the pipeline from the asset and removes the threat of damage to existing assets by vibration. - Crossing of buried assets will be subject to a specific detailed construction methodology that will limit ground vibration to protect the existing asset(s).	Performance Objective 15 Management Action NV1-NV3	1